

Zero Retries Beacon Edition 0093 2023-04-07

Zero Retries is an independent newsletter about technological innovation in Amateur Radio. Zero Retries promotes Amateur Radio as (literally) a license to experiment with radio technology.

About Zero Retries

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About the BEACON Edition

See the explanation about the BEACON Edition in Zero Retries 0091.

Web Repository for W6BI's AREDN Documents

In Zero Retries 0092 BEACON Edition - Good AREDN Documents Available on Facebook, I took AREDN Ambassador Orv Beach W6BI mildly to task about placing useful documents that he developed about AREDN on Facebook, thus accessible only to those who are on Facebook and members of the FB AREDN group. W6BI responded gracefully by creating a repository for those documents on a personal website - http://orvsplace.net/aredn_stuff/ which includes:

- Suggested 802.11n Replacements
- AREDN Beginners Guide v21
- AREDN Networking Overview v5.3
- Device Selection Chart
- Useful Links

I was also contacted by one of the AREDN developers:

The reason Orv's [documents aren't] on the AREDN website is because these devices aren't supported in the latest production release. They are only in the nightly builds. Our next [production] release is scheduled for the weekend of [2023-04-15]. The website will then be updated with this documentation.

Point taken - It is a good idea to keep the *formal* documentation “clean” and in sync with the most current released software. I’ve done much the same thing in a previous job where I developed informal, but highly useful documentation that I could supply to customers in my technical

support position. My documentation was not publicly available as it had not gone through the formal release process by the company's engineering staff, marketing, etc. (One of the reasons why my documentation *was useful* is that it *didn't* get "neutered" by the engineering staff, marketing, sales, etc.)

In any case, *Thank You W6BI* for doing this for the AREDN community!

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Yaesu FTM-3100R Modification for Flat Audio Connection

TARPN recently released a [detailed procedure](#) to add a connection for "9600 baud" to the Yaesu FTM-3100R that is compatible with the higher speed mode(s) of the TARPN NinoTNC.

The FTM-3100R is an analog 2-meter FM transceiver that can have a TNC data-connector added, enabling the radio to participate in sending and receiving 9600-baud FSK packet signals. At the time of writing, this radio is widely available for about \$150 retail.

The FTM-3100R shares its main board with its C4FM-capable sibling, the FTM-3200R. Because of this, there are convenient circuit traces on the main board that carry discriminator audio to the (unpopulated) DSP daughter card, and feed wideband audio to the two-point FM modulator circuit. A straight-forward procedure can add a dedicated packet radio port, while keeping all normal features of the radio completely functional.

This is quite a boon to our project as it scores above our other prime 9600 candidate, the Tait TM8105, in several ways. The radio is more powerful, 65 W, has an S-meter, easy frequency selection, monitor speaker with volume control (does not affect Rx packet data). Even the squelch on works for the monitor speaker without muting the receive data. This radio is also available new Gigaparts or new HRO for only a little more than the 25 W Tait was available on eBay.

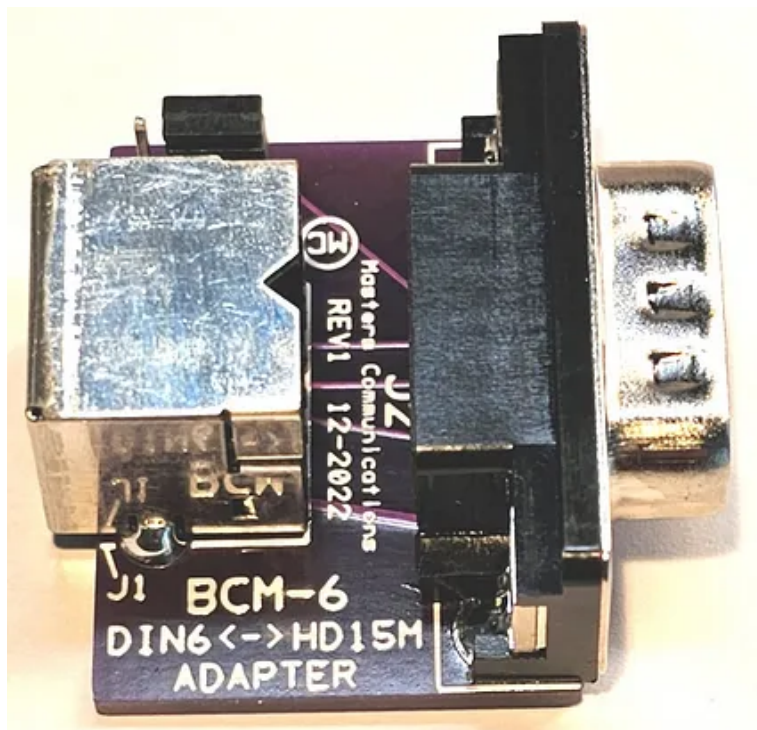
The trickiest part of the procedure appears to be drilling through the rear panel and not leaving metal shavings or damaging any components as the drill bit enters the interior of the radio.

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BCM-6 — 6-pin MiniDIN Adapter for Bridgecom Systems BCM Radios

The Bridgecom Systems [BCM-144](#) (144-148 MHz) [BCM-220](#) (222-225 MHz), and [BCM-440](#) (440-450 MHz) mobile radios are some of the few Amateur Radio units in production that come standard with a flat audio connection that allows "plug and play" higher speed data modes such as VARA FM and 9600 bps packet radio.

However, the BCM series' flat audio connector is a nonstandard (for Amateur Radio) High Density 15-pin DSUB socket (the same connector used on PCs for VGA video). Thus to connect to nearly any "modem" used in Amateur Radio to a BCM radio required a unique adapter cable.



Masters Communications BCM-6. Image courtesy of Masters Communications.

To make it easier to use the Bridgecom Systems BCM series for higher speed data (no unique adapter cable needed), Masters Communications now offers the [BCM-6](#), a simple High Density 15-Pin DSUB plug to 6-pin MiniDIN socket adapter. The 6-pin MiniDIN socket is the “industry standard” within Amateur Radio for connection of higher speed modem units such as audio interfaces and TNCs.

In my testing of the BCM-6, the jumper block on the left side makes it difficult to secure the included screw, but I’m told that offsetting the driver blade can still provide adequate torque to secure the screw. For my purposes (operating higher speed modes), the jumper is a one-time setting (9600) so on my current and future BCM-6s, I may simply remove the jumper and solder-bridge the 9600 setting.

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West Mountain Radio RIGrunner 10010i Rackmount



Image courtesy of West Mountain Radio

The West Mountain Radio [Radio RIGrunner 10010i Rackmount](#) offers some unique capabilities that are particularly useful for a remote system or even an individual Amateur Radio station with multiple radios. These capabilities were notable to me:

- Its a rack mount unit which makes it a lot easier to mount in a reasonable location within my station.
- The power connections on the unit are “Amateur Radio Standard” Anderson Powerpole connectors. Love ‘em or hate ‘em, Powerpoles are standardized within Amateur Radio, they work, and they’re plug and play.
- Total current capability of the unit is 100 amps at 12 volts DC.
- There are ten individual circuits (connector); each circuit can be individually turned on and off remotely and an individual current limit set — from 100mA up to 40A. This capability eliminates the need for inline fuses for units such as radios [1](#).
- Though there is no front panel control (no switches or pushbuttons to turn an individual circuit Off or On), there is front panel monitoring which makes troubleshooting a lot easier. Is the unit off, or is the circuit dead?

Best of all it’s from West Mountain Radio, who has long experience now in providing well-engineered power management products for Amateur Radio use.

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Rediscovered Gem - Packet Power Newsletter (Circa 1994)

Dave Wolf W05H sent me a copy of his new Packet Power Newsletter, It’s an eight-page monthly intended to keep packet buffs up to date.

...

Looks pretty good for packet buffs.

I found this brief mention [in an issue of 73 Magazine](#) on the Internet Archive while searching for something else. I had not previously heard of Packet Power Newsletter! I was able to make contact with W05H and put him in touch with Digital Library of Amateur Radio & Communications (DLARC) for a potential donation of Packet Power Newsletter for posterity.

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Artemis II Mission to Luna - 2... 3 Amateur Radio Operators!

Amateur Radio on the International Space Station (ARISS) [on Mastodon](#):

The crew of [#Artemis](#) II will contain 2 veteran ham radio ops! Amateur Radio on the International Space Station veterans Reid Wiseman (KF5LKT) and Victor Glover (KI5BKC) are joined by Jeremy Hansen and Christina Koch on their trip to the Moon! Congratulations!

Update: We also found in our notes that Jeremy Hansen is KF5LKU! Congratulations on being the first Canadian ham radio operator to go to the moon!

Astronaut Amateur Radio Operators - that coolness factor just doesn’t fade!

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Help Build a Wireless, Solar-powered Chat Network in Philadelphia

Seen on Mastodon - [@iffybooks@post.lurk.org](https://post.lurk.org/@iffybooks)

We're looking for help to build a wireless, solar-powered chat network across the Philly area! Are you interested in learning about off-grid solar power? Do you have a sunny place on your roof, in your yard, or near an upstairs window where you can leave a small radio transceiver? This workshop may be for you!

Each participant will receive a free kit with all the parts needed to build a solar-powered LoRa radio node. You'll assemble the kit, mount it in a weatherproof enclosure (provided by you), and use the Meshtastic app to start sending encrypted text messages.

Registration opens Monday, April 3rd at 8:30 p.m. You can sign up on our site:

<https://iffybooks.net/event/solar-chat-network>

Supplies for this workshop are provided by a grant from the Engaged Humanities Studio at Swarthmore College. Many thanks to [@pixouls](#) for helping plan the event!

It's so cool to see that data communications over radio have progressed to the point that not only can a chat system be built by ordinary citizens, but that the effort is led by a bookstore.

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[SparkSDR](#)

Cross platform sdr application for Hermes Lite and Open HPSDR compatible radios (Red Pitya, Apache labs) and SDRplay. Runs on Windows 7+, Linux x64, linux arm(rpi) and Mac.

Features

- Run multiple radios at a time each with as many receivers as they support.
- Built in digi modes (PSK31, WSPR, JT9, JT65, FT8, FT4, FST4, FST4W) no need for virtual audio or serial cables.
- Virtual receivers that allow many modes to be monitored at once. This shares the bandwidth of as many slice receivers as the radio has between multiple modes
- ...

Built-in data modes is the distinguishing feature of SparkSDR - other Software Defined Radio software only implement the *radio* functionality; additional software (and extensive fiddling) is required to get data modes also working (doable, but tedious).

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[SDR++](#)

The bloat-free SDR receiver - SDR++ is a cross-platform and open source SDR software with the aim of being bloat free and simple to use.

Features

- Multi VFO
- Wide hardware support (both through SoapySDR and dedicated modules)
- SIMD accelerated DSP
- Cross-platform (Windows, Linux, OSX and BSD)
- Full waterfall update when possible. Makes browsing signals easier and more pleasant
- Modular design (easily write your own plugins)

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[Maia SDR](#)

An open-source FPGA-based SDR project focusing on the ADALM Pluto. Maia SDR currently provides a firmware image for the [ADALM Pluto](#) with the following functionality:

- Web-based interface that can be accessed from a smartphone, PC or other device.

- Real-time waterfall display supporting up to 61.44 Msps (limit given by the AD936x RFIC of the Pluto).
- IQ recording in [SigMF format](#), at up to 61.44 Msps and with a 400 MiB maximum data size (limit given by the Pluto RAM size). Recordings can be downloaded to a smartphone or other device.

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(Apologies to email readers who saw a bunch of potential story ideas (links) in this space.)

Join the *Fun* on Amateur Radio

If you're not yet licensed as an Amateur Radio Operator, and would like to join the fun by *literally having a license to experiment with radio technology*, check out

Join the Fun on Amateur Radio for some pointers.

Zero Retries Frequently Asked Questions (FAQs) - In development 2023-02.

Closing the Channel

In its mission to highlight technological innovation in Amateur Radio, promote Amateur Radio to techies as a literal license to experiment with wireless technology, and make Amateur Radio more relevant to society in the 2020s and beyond, Zero Retries is published via email and web, and is available to anyone at no cost. Zero Retries is proud *not to participate* in the Amateur Radio Publishing Industrial Complex, which hides Amateur Radio content behind paywalls.

My ongoing *Thanks* to:

- Tina Stroh KD7WSF for, well, *everything*!
- **Pseudostaffers** that write about about “Zero Retries Interesting” items on their blogs that I don’t spot:
 - [Dan Romanchik KB6NU](#)
 - [Jeff Davis KE9V](#)
- **Newsletters** that regularly feature Zero Retries Interesting content:
 - [Amateur Radio Weekly](#) by Cale Mooth K4HCK is a weekly anthology of links to interesting Amateur Radio stories.
 - [Experimental Radio News](#) by Bennet Z. Kobb AK4AV discusses (in detail) Experimental (Part 5) licenses issued by the US FCC.
 - Other Substack Amateur Radio newsletters recommended by Zero Retries.
- **YouTube channels** that regularly feature Zero Retries Interesting content:
 - [HB9BLA Wireless](#) by Andreas Spiess HB9BLA
 - [KM6LYW Radio](#) by Craig Lamparter KM6LY emphasizes Amateur Radio data communications such as the [DigiPi project](#).
 - [Tech Minds](#) by Matthew Miller M0DQW is subtitled Ham Radio - SDR - RF Projects - Software - Tutorials.
- The [Substack email publishing platform](#) makes Zero Retries possible. I recommend it for publishing newsletters.

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If you're a fellow smart person that uses **RSS**, there *is* an **RSS feed for Zero Retries**.

Zero Retries (N8GNJ) is on Mastodon - n8gnj@mastodon.radio - just click:

[Zero Retries / N8GNJ on Mastodon](#)

Email issues of Zero Retries are “instrumented” by [Substack](#) to gather basic statistics about opens, clicking links, etc.

More bits from Steve Stroh N8GNJ:

- [SuperPacket blog](#) - *Discussing new generations of Amateur Radio Data Communications - beyond Packet Radio (a precursor to Zero Retries)*
- [N8GNJ blog](#) - *Amateur Radio Station N8GNJ and the mad science experiments at N8GNJ Labs - Bellingham, Washington, USA*

Thanks for reading!

Steve Stroh N8GNJ / WRPS598 (He / Him / His)

These bits were handcrafted in beautiful Bellingham ([The City of Subdued Excitement](#)), Washington, USA.

2023-04-06

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Blanket permission granted for TAPR to use any Steve Stroh content for the TAPR Packet Status Register (PSR) newsletter (I owe them from way back).

1

In my shack, if I eliminated inline fuses for radios, I would first put on a tag, or label, something like **MAX CURRENT 20A** for a radio that recommends using a 20A fuse.